ACTA MEDICA IRANICA
Vol. XII; 1969, P. 43-48

Antibodies to Myxovirus Parainfluenza-3 Virus in Human Sera in Iran.*

By :

A. AFSHAR, D.V. Sc., Ph. D. ** and S. FATEMI ***

Since 1955, the widespread application of tissus culture technique in the detection of viruses as the cause of human respiratory diseases has led to the defintion of many viruses, namely Influenza, A.B.C Parainfluenza, 1 - 4, Herpesviruses, Adenoviruses, Reoviruses, Phinoviruses and Picornaviruses (Horsfall and Tamm, 1965; Andrewes and Pereira, 1967). The Parainfluenza-3 viruses which are classified in the Myxovirus group (Andrewes and Pereira, 1977; Afshar, 1966) have been associated with pneumonia in children (Chanock, 1959, 1963, Parrott, 1959, Gresser, 1962; Chanock and Parrott, 1965) and common cold-like symptoms in adults (Tyrrell, 1959; Bloom, 1961). Since a serological survey can provide information concerning the existance and incidence of a disease in a population, this study shows the presence of haemagglutination inhibition (HI) antibodies to Myxovirus Parainfluenza type 3 virus (MP I 3) in human population in Iran.

MATERIALS AND METHODS

A bovine strain of MPI3 virus, originally isolated by Dawson(1964) was employed in this study, It was supplied in the form of lyophilized calf kidney tissue culture harvest material by Dr. J. H. Darbyshire, Central Veterinary Laboratory, Weybridge, England. The virus was serially passaged, three times, in BHK/21 cell cultures, supplied by Dr, A. Haz-

* From Department of Microbiology, Faculty of Veterinary Medicine, University of Teheran.

** Associate Professor, Faculty of Veterinary Medicine.

*** Undergraduate Student, Faculty of Veterinary Medicine.

rati, Razi Institute, Karaj. After cytological and serological identification of the virus as MPI 3 in the harvest material from the last passage. it was used in HI tests.

Serum samples were obtained from patients, not necessarily affected with respiratory illness and referred to one of the Worker's Insurance Diagnostic Laboratories in Teheran. All the sera were stored at - 20° C. until required and were inactivated at 56° C. for 30 minutes prior to examination.

The haemagglutination inhibition tests were performed in W. H. O. perspex-trays. Serial two-fold dilution of serum was prepared in physiological saline. To 0.2 ml. of each serum dilution an equal volume of virus dilution containing 4 haemagglutinating units was added. The antigen-serum mixtures were kept at room temperature for 30 minutes before the addition of 0.2 ml. of an 0.5 per cent suspension of guinea pig erythrocytes. The plates were kept at room temperature and the end points were read by the sedimentation pattern method (Cunningham. 1963). The HI antibody titer of the serum was taken as the highest initial dilution of serum which completely inhibited haemagglutination.

RESULTS

The result of the HI tests with MPI 3 virus on 199 human serum samples is shown in Table I. A higher percentage of positive samples was recorded in male human serum samples than female. The results of positive human sera, arranged according to age grouping are shown in Fig. 1. The percentage of positive samples increased according to the age of the human beings. The distribution of the serum antibodies is shown in Fig. 2.

DISCUSSION

From the results of this work, presented in Table I, it is evident that the parainfluenza 3 virus infection is widespread among the human population in Iran. In the present serological survey, the human sera were tested against a bovine strain of MPI 3 virus which is immunologically related to the human strain, (Abinanti and Huebner, 1959, Abinanti, 1961, Abinanti, 1963). In view of the existence of a reciprocal relationship between human and bovine strains of MPI 3 virus, in which homologus serum titers are 4 to 8 fold higher than heterologus titers (Abinanti, 1961), the percentage of positive serum samples would be higher

if a human strain of virus had been employed. In support of this view, Chanock 1961, found that every specimen of sera tested from adult contained antibodies to the human strain of MPI 3 virus. In addition, if a human strain had been employed in the present study, the pattern of HI antibody distribution, shown in Fig 2, would be different.

The increase in the percentage of positive sgmples with an increase in the age of the human being (Fig 1) may be indicative of a continued re-exposure of the population to infection. From data on the natural infection of children and exposure of adult volunteers to MPI 3 virus, it is apparent that despite the presence of a high level of humoral antibodies some individuals can become reinfected (Tyrrell, 1959; Chanock, 1961; Gresser, 1963; Chanock and Parrott, 1965). Re-exposure of the individnal to infection causes respiratory disturbance, virus excretion and a rise in the level of antibody. However, in nature, the illness usually ocours less often and is less severe during reinfection than during primary infection (Chanock and Parrott, 1965). Concerning the pathogenicity of MPI 3 virus, it has been found that the human strain of virus causes respiratory illness in children, ranging from a mild disease with or without fever, to rhinitis and pharyngitis, bronchitis and pneumonie (Chanock, 1959, Parrott, 1959; Chanock, 1961 ; Gresser, 1961; Chanock and Parrott, 1965) and common colo-like symptoms in adults (Tyrrell, 1959; Bloom, 1961; Chanock and Parrott, 1965). Although other viruses might be responsible for the respiratory illnesses (Andrewes and Pereira, 1967) in this country, MP13 virus can also be considered as a cause for such diseases.

ACKNOWLEDGEMENTS

The authors wish to thank Dr. J. H. Darbyshire of the Central Veterinary Laboratory, Weybridge, England for the supply of the virus; Mr. Ataii for the sera and Dr. A. Hazrati for the BHK / 21 cell line. We are indebted to Dr. M. L. Smith, CENTO Scientific Secretary for providing scientific Funds and Mr. C. Lister of the Iranian Oil Operating Companies for the financial assistance given to this Department. We also wish to thank Dr. A. Rafyi, the Dean and Dr. A. Shimi, the head of the Microbiology Department for their encouragements. Thanks are due to Mr. A. Hydarnia for his able technical assistance.

Table 1

Presence of HI antibody against Parainfluenza 3 Virus in human sera

	Total Sera	Number of Positive	Percentage of Positive
Male	104	78	75
Female	95	67	70.52
Total	**199**	**145**	**72.26**

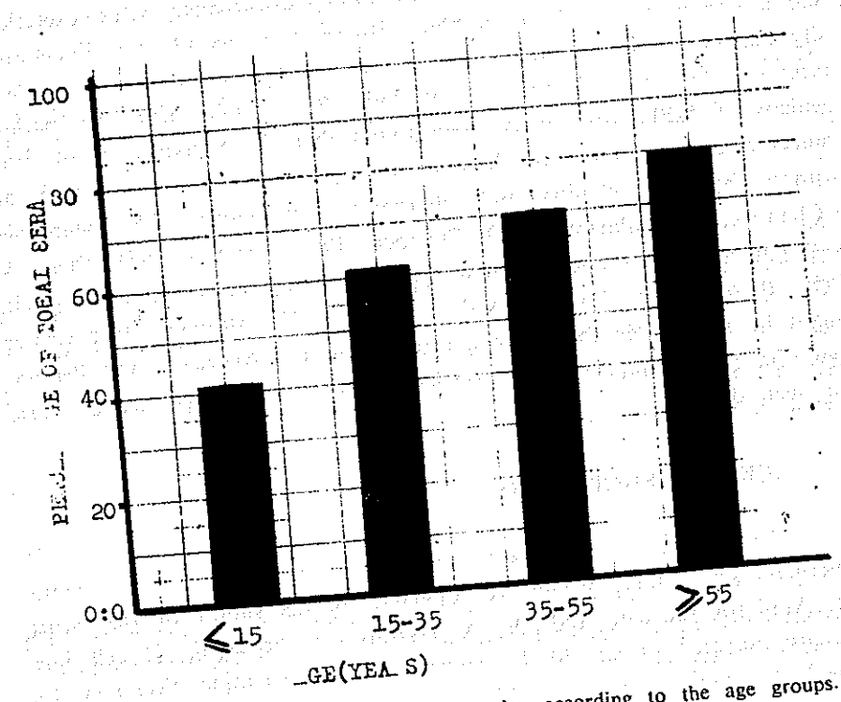

Fig 1 – Results of positive human samples according to the age groups.

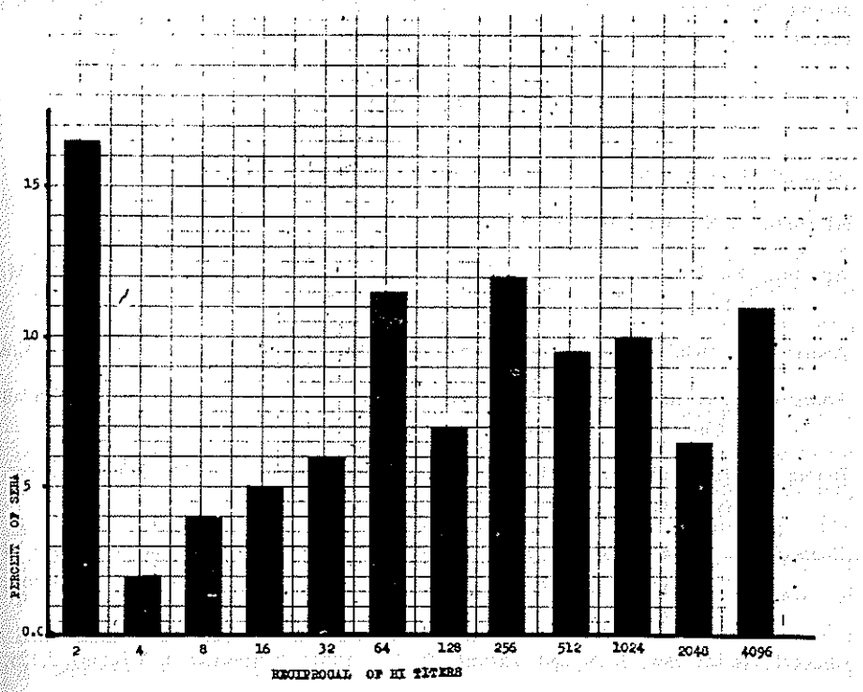

Fig 2 – The distribution of HI antibody titers in 199 human sera.

Summary

199 human serum samples were examined for the presence of Myxovirus Parainfluenza 3 (MPI 3) haemagglutination inhibition (HI) antibodies. Of the total male sera, 75% and female 70.52% had HI antibody titers of 1:32 or greater. The percentage of positive samples increased according to the age grouping of the human beings. These results indicate that MPI 3 virus infection is widespread among the human population in Iran. and it may be considered as one of the causes of respiratory illnesses in children and adults.

References

Abinanti, F. R. (1963). Am. Rev. Rev. Dis. 88:290

Abinanti, F. R. and Huebner, R. J. (1959). Virology, 8:391.

Abinanti, F. R., Chanock, R. M., Cook, M. K., Wong, D. and Warfielp, M. (1961). Proc. Soc. exp. Biol. D.Y. 105: 466.

Afshar, A. (1966), Journal of Veterinary Faculty, University of Teheran, 22 (3):9

Andrewes, C. H. and Pereira, M. S. (1967), "Viruses of Vertebrates" Bailler, Tindall and Cassell Ltd. London.

Bloom, H. H., Johnson, K.M., Jacobseu, R. and Chanock, R. M. (1961), Amer. J. Hyg. 74:50.

Chanock, R. M. and Parrott, R.H. (1965). in "Viral and Rickettsial Infections of Man" Edited by Horsfall F. L. and Tamm, I., 4th edition J.B. Lippincott, Co. Philadelphia, U.S.A.

Chanock, R.M., Bell, J. A. and Parrott, R. H. (1961). Perspective in Virology, 2:126.

Chanock, R. M., Parrott, R. H., Johnson, K. M., Kapkian, A.Z. and Bell, J. A. (1963). Amer. Res. Res. Dis. 88:152.

Cunningham, C.H. (1963). "A Laboratory Guide in Virology, 5th Edition, Burgess Publ. Co., U.S.A.

Dawson, P.S. (1964). Res. Vet. Sci. 5:81.

Gresser, I. (1962). Arch. Ges. Virusfororsch 13:250.

Huck, R.A. (1962). Vet. Bull. 32:493.

Parrott, R. H., Vargosko, A., Luckey, A., Kim, H. W., Cumming, C. and Chanock, R. M. (1959), New Eng. J. Med. 260:731.

Tyrrell, D.A.J., Bynoe, M.L., Birhum – Peserson, K.. Sutton, R. N. P. and Pereira, M.S. (1959). Brit. Med. J. 2:909.

ACTA MEDICA IRAGICA
Vol. XII; 1969, P. 49-51

The First Iranian Record of Suncus Murinus ✿

A. Farhang Azad ✿✿

The genus **Suncus** is presently known in Iran only from specimens of **Suncus etruscus** Savi. 1822 from the Caspian region. Goodwin (1940) records specimens of this species from Darkaleh, Gorgan, and the Street Expedition (Lay, 1967) collected one in Mazandaran, 14.5 km. north, 1.6 Km. west of Gorgan. In this report an additional species, **S. murinus** is recorded.

On 22 Oct., 1968, Dr. E. Javadian, Associate Professor of Environmental Health, Tehran University and chief of the Medical Research Station of Abadan, collected another **Suncus** specimen, recorded herein, and kindly presented it to me for identification and reporting. The specimen was collected in a live trap approximately 15 Km. N. W. of Abadan in wet grassland near the Karoun River in the southwest of Iran near the head of the Persian Gulf. The specimen (I.P.H.R. 310) is deposited in the research collection of the Institute of Public Health Research, Teheran University.

It is an adult male identified as **Suncus murinus** Linnaeus, 1766. External meaurements (in mm) are as follows:

Total length 195, tail length 79, hind foot 21.2 and ear length (from notch) 13.7.

✿ This study has been supported in part by the Institute of Public Health Research, Univ. of Teh. and in part from funds of the Ministry of Hlth. and Plan Org. for the Project No. 6395.

✿✿ Associate Research and chief of Mammal Laboratory, School of Public Health & Iestitute of Public Health Research, Teheran – IRAN.